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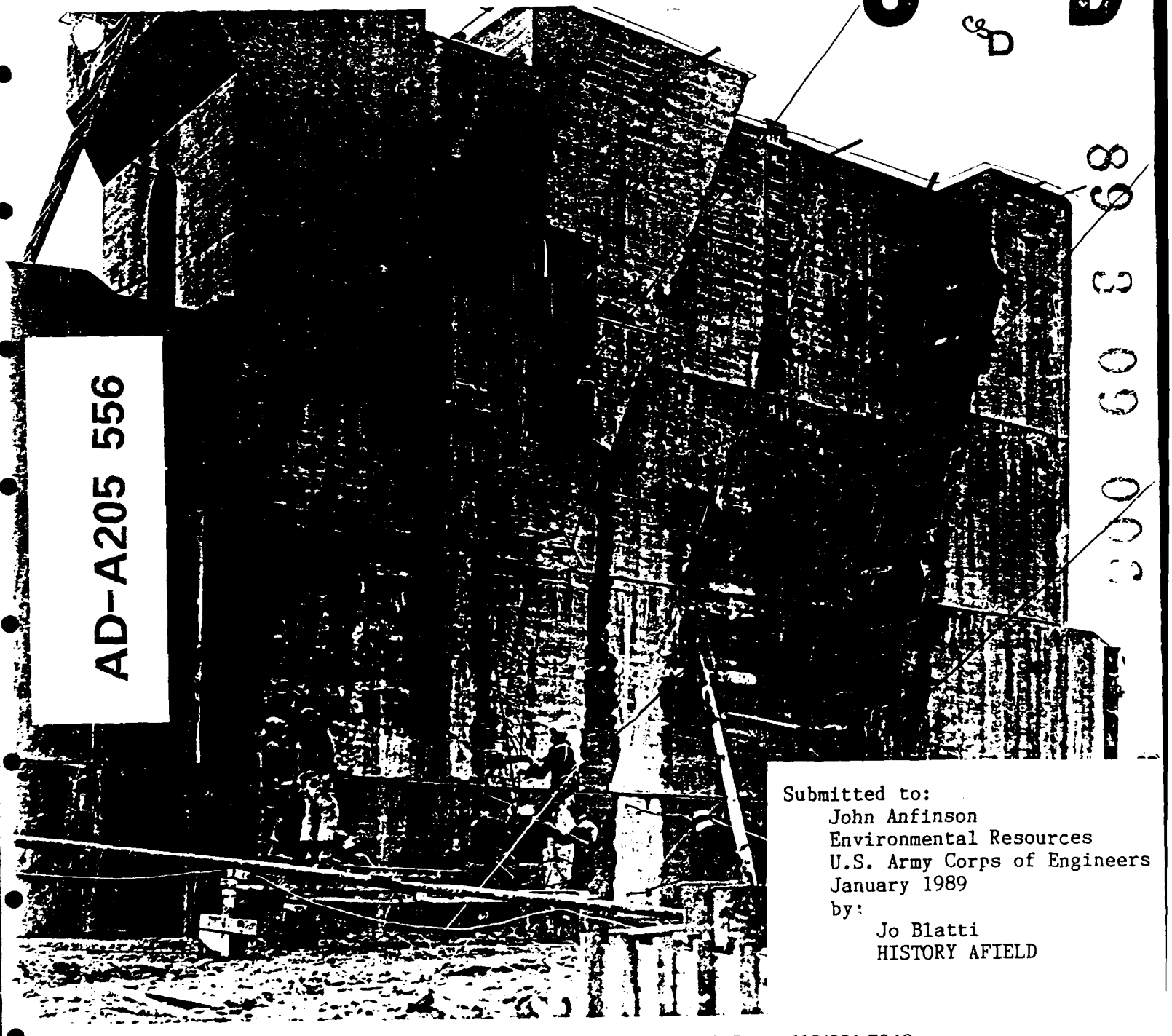
HISTORY AFIELD

FINAL
POPULAR REPORT:
ORAL HISTORY OF THE
MISSISSIPPI LOCKS & DAMS NOS. 3-10
DACW 37-87-M-1503



Submitted to:
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January 1989
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HISTORY AFIELD

P.O. Box 75295 St. Paul, Minnesota 55175-0295 612/291-7048

REPORT DOCUMENTATION PAGE

Form Approved
OMB No 0704 0188
Exp Date Jun 30 1986

1a REPORT SECURITY CLASSIFICATION
Unclassified

1b RESTRICTIVE MARKINGS

2a SECURITY CLASSIFICATION AUTHORITY

2b DECLASSIFICATION / DOWNGRADING SCHEDULE

3 DISTRIBUTION / AVAILABILITY OF REPORT
Approved for public release; distribution unlimited

4 PERFORMING ORGANIZATION REPORT NUMBER(S)

5 MONITORING ORGANIZATION REPORT NUMBER(S)

6a NAME OF PERFORMING ORGANIZATION
History Afield

6b OFFICE SYMBOL (If applicable)

7a NAME OF MONITORING ORGANIZATION
U.S. Army Engineer District, St Paul

6c ADDRESS (City, State, and ZIP Code)
PO Box 75295
St Paul, MN 55175-0295

7b ADDRESS (City, State, and ZIP Code)
1421 USPO & Custom House
St Paul, MN 55101-1479

8a NAME OF FUNDING / SPONSORING ORGANIZATION

8b OFFICE SYMBOL (If applicable)

9 PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
DACW37-87-M-1503

8c ADDRESS (City, State, and ZIP Code)

10 SOURCE OF FUNDING NUMBERS

PROGRAM ELEMENT NO.	PROJECT NO	TASK NO	WORK UNIT ACCESSION NO

11 TITLE (Include Security Classification)
ORAL HISTORY OF THE MISSISSIPPI RIVER LOCKS & DAMS NOS. 3-10: Popular report

12 PERSONAL AUTHOR(S)
Jo Blatti

13a TYPE OF REPORT	13b TIME COVERED	14 DATE OF REPORT (Year, Month, Day)	15 PAGE COUNT
Final	FROM _____ TO _____	1989	18

16 SUPPLEMENTARY NOTATION
Series consists of popular report, literature review and phase II pilot interviews

17 COSATI CODES		
FIELD	GROUP	SUB-GROUP

18 SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
History
Mississippi River
Locks and Dams
U.S. Army Corps of Engineers

19 ABSTRACT (Continue on reverse if necessary and identify by block number)
1988 is an anniversary year on the Upper Mississippi; the St. Paul District, Corps of Enginners section of the 9-foot channel turned 50. In recognition of the 9-foot channel's importance to the District office, and history of inland navigation in the area, the Corps of Engineers staff collected documents and commissioned oral history interviews with persons who worked on the project.

20 DISTRIBUTION / AVAILABILITY OF ABSTRACT
☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT ☐ DTIC USERS

21 ABSTRACT SECURITY CLASSIFICATION
Unclassfied

22a NAME OF RESPONSIBLE INDIVIDUAL

22b TELEPHONE (Include Area Code)

22c OFFICE SYMBOL

DD FORM 1473, 84 MAR

83 APR edition may be used until exhausted
All other editions are obsolete

SECURITY CLASSIFICATION OF THIS PAGE

THE 9-FOOT CHANNEL: A PROJECT IN TECHNOLOGICAL AND COMMUNITY HISTORY ALONG THE MISSISSIPPI

1988 is an anniversary year on the Upper Mississippi; the St. Paul District section of the 9-foot channel turned 50. The system was built in the 1930s by three adjacent districts of the U.S. Army Corps of Engineers: St. Paul, Rock Island, and St. Louis. Through a series of locks and dams, the river was "canalized" between Minneapolis-St. Paul, Minnesota and St. Louis, Missouri. The purpose of the slackwater navigation system was to provide a guaranteed 9-foot draft for commercial tows and barges on an historically shallow stretch of the river. The St. Paul District section of the 9-foot channel consists of 11 lock and dam structures between Hastings, Minnesota and Guttenberg, Iowa. [Note: The Guttenberg facility was built by the Rock Island District and transferred to St. Paul jurisdiction in 1940.]

FIGURE 1

system map

In its time, the 9-foot channel was a massive undertaking - involving first-time applications of engineering technology within the District, the expenditure of millions and the labor of thousands. Corps of Engineers personnel conducted design, testing and contracting operations for the project; equally importantly, they supervised construction of the project by local and national contractors.

FIGURE 2

group photo Corps personnel

In recognition of the 9-foot channel's importance to the District office and to area citizens, the Corps of Engineers staff has begun to collect documents and commission oral history interviews with persons who worked on the project.

FIGURE 3

construction photo (populated)

Navigation on the Upper Mississippi

The idea of a mechanically dammed slackwater canal on the Mississippi between Minneapolis-St. Paul and St. Louis began to be discussed in the 1920s. The Corps of Engineers had been present in the area since the 1860s, dredging the river and constructing wing dams with the aid of contractors and crews up and down the river.

FIGURE 4

long shot wing dams

However, the 4 1/2 foot and 6 foot channels maintained in the late 19th and early 20th centuries proved inadequate to commercial barge and recreational navigation. The Upper Mississippi remained bedeviled by low water and snags.

The 9-foot system was a controversial idea in some respects. Some local farmers and major railroad lines were concerned that their respective properties along the channel might be flooded by the locking pools formed behind the dams. Environmentalists, members of the Izaak Walton League most notably, voiced their worries that the proposed channel might harm breeding and living conditions in the newly established Upper Mississippi Wildlife Refuge along the river's banks. However, the 9-foot project enjoyed the support of prominent Upper Midwest businessmen and politicians, and following hearings and negotiations that addressed the concerns of critics, the system was authorized by the River and Harbors Act of 1930.

The project proved important source of Depression-era employment for residents of communities along the river, and initial lock and dam construction was funded through federal relief appropriations until 1935. Subsequent appropriations were made through the River and Harbor Acts that conventionally supported Corps of Engineers projects.

FIGURE 5

long shot of lock and dam complex

An estimated 5000 people worked on the St. Paul District section of the channel at its peak in the mid-1930s. Dozens of contractors throughout the Midwest and the Northeast bid and built sections of the project. Several lock and dam complexes were under construction at any given time. The cast of characters included Corps supervisory and inspection personnel; the contractors' "key men" — skilled foremen and field supervisors who moved from job to job; locally hired work crews who did everything from cutting brush to pouring concrete. Payrolls at individual sites averaged approximately 600 each.

Communities up and down the river made room for large-scale construction and large numbers of transient residents. Genoa, Wisconsin is the site of lock and dam no. 8. A 1983 community history notes:

> Business boomed, particularly taverns. Anyone having a room in a home had no trouble renting it. A large commissary, built in the area of the old fire station, was used to feed dam workers.

In nearby Lynxville, Wisconsin the construction of lock and dam no. 9 lives in memory also. A community history there notes:

> [T]he construction...started in January 1934. Many, many people were hired at that time as workers. The population of Lynxville grew to over 2,000 people.

FIGURE 6

either Genoa or Lynxville, WI ca. 1930s

The experience of building the channel

Research into recollections about the engineering, working conditions and community aspects of the 9-foot channel system is just beginning. However, memories of working life on the project abound in the pilot studies. For

instance, Joseph McDonald, who worked for Nolan Brothers contractors on lock no. 7, had this to say about the scale of the 9-foot project:

> These kinds of jobs, regardless of size, are routine as far as the contractor is concerned. Concrete is concrete no matter what shape you put it in (p. 9). [T]he biggest problem is capacity to handle it financially and experience in handling crews above normal size and be able to direct the activities of a lot of men (p. 39).

As it happens, Nolan Brothers took on an associate contractor to strengthen its bid on the lock no. 7 job, and still faced some bonding difficulties before successfully completing its contract (p. 3).

As regards innovative techniques and specifications on the 9-foot project, Mr. McDonald noted that this "type of work had never been done in this part of the country before" (p. 15). Describing the mobile cranes and other equipment he needed to acquire for the job, McDonald noted: "I'd run into things I'd never used before (p. 8)." Corps engineer Elmer Christenson made the same sort of comment about his work on the locks and dams at complexes nos. 3 and 4:

> It had never been done before in the St. Paul District, of course, either a Taintor gate or a roller gate (p. 20).

FIGURE 7

Taintor/roller

These were the two types of movable dam gates employed in the 9-foot channel design. Roller gates are complete cylinders; in the 9-foot channel design, the roller gates are lifted by large gears and motors housed in the roller gate piers. The Taintor gate is a section of a cylindrical drum, similar in appearance to a convex bulldozer blade. In the 9-foot channel dams, these gates are lifted by hoist cars at Dams 4 and 5, by individually motorized hoists at other sites. Both systems were adapted from European engineering structures and earlier channel building on the Ohio River in the U.S. In fact, Christenson had been sent out to the Corps offices in Ohio to work on the Mississippi adaptations. Both gate types combine the advantages of flexible

control of the pool levels in normal-to-low river conditions with complete lift out of the water in times of high or flood waters.

Other 9-foot veterans recall daily living and work conditions. For instance, Frank A. Daly remembers his rooming arrangements during a stint as concrete inspector for lock no. 4 in Alma, Wisconsin.

> I'm not exaggerating when I state that it was just as cold in that upper front bedroom as it was outside. And during those first few weeks in March 1933, the temperature frequently dropped down to around ten above zero. Fortunately, the landlady furnished us with a number of heavy quilts. Carl Anderson, my roommate, and I used so many that we could hardly turn over in bed. (FAD ms. 624-625)

9-foot channel work went on around the clock and around the calendar. Elmer Christenson remembers the weather when he was working on lock and dam complex no. 3 upriver from Red Wing, Minnesota.

> Winter of 1936 was one of the worst winters that I can recall. Most of us lived in Red Wing, of course. So we had to get out there by car in the wintertime [Boats were often used in other seasons.], and we had to fight 20-foot drifts. The contractor would sometimes provide a machine to clear the road for us. (p. 48)

Joseph McDonald described the procedures used to handle concrete construction in the wintertime.

> [T]hey developed systems where they heated the materials before [the concrete] was mixed, even if you had steam rollers on the job. Build a platform and store your material in the sand and the gravel. And we put pipes along on the floor of that and then stacked it on there. Once the material is heated and then the internal process of cement generates heat in itself. And with a job like [lock no. 7], the bigger the bulk of concrete you had, the more heat that developed by itself.

Before the preheating system McDonald describes, was developed, construction crews commonly used "salamanders", tall metal cans with coke or charcoal fires inside them, for large and small jobs in cold weather.

These recollections are just a sample. The Corps of Engineers is still collecting information about working on the 9-foot channel project in the 1930s. If you know of possible oral history informants or documents relating

to the project, please contact John Anfinson at the St. Paul District Corps of Engineers, 1135 U.S. Post Office and Custom House, St. Paul, MN 55101 (612/220-0260).

FIGURE 8

Note: This report is based on research conducted by John Anfinson, St. Paul District Corps of Engineers, Jon Gjerde (Historic Resources Evaluation 1983), Patrick O'Brien of the National Park Service, Rocky Mountain Regional Office and Jo Blatti of HISTORY AFIELD (author).

For further information about the Upper Mississippi and the 9-foot channel, we suggest:

The River's in My Blood: Riverboat Pilots Tell Their Stories by Jane Curry

A Stretch on the River: A Novel of Adventure on a Mississippi River Towboat by Richard Bissel

Creativity, Conflict and Controversy: A History of the St. Paul District U.S. Army Corps of Engineers by Raymond H. Merritt

The collections of the Winona County Historical Society, the University of Wisconsin-LaCrosse Library, the Minnesota Historical Society and the Hennepin County Historical Society include memoirs, photographs and other materials about the Mississippi River and 9-foot channel.

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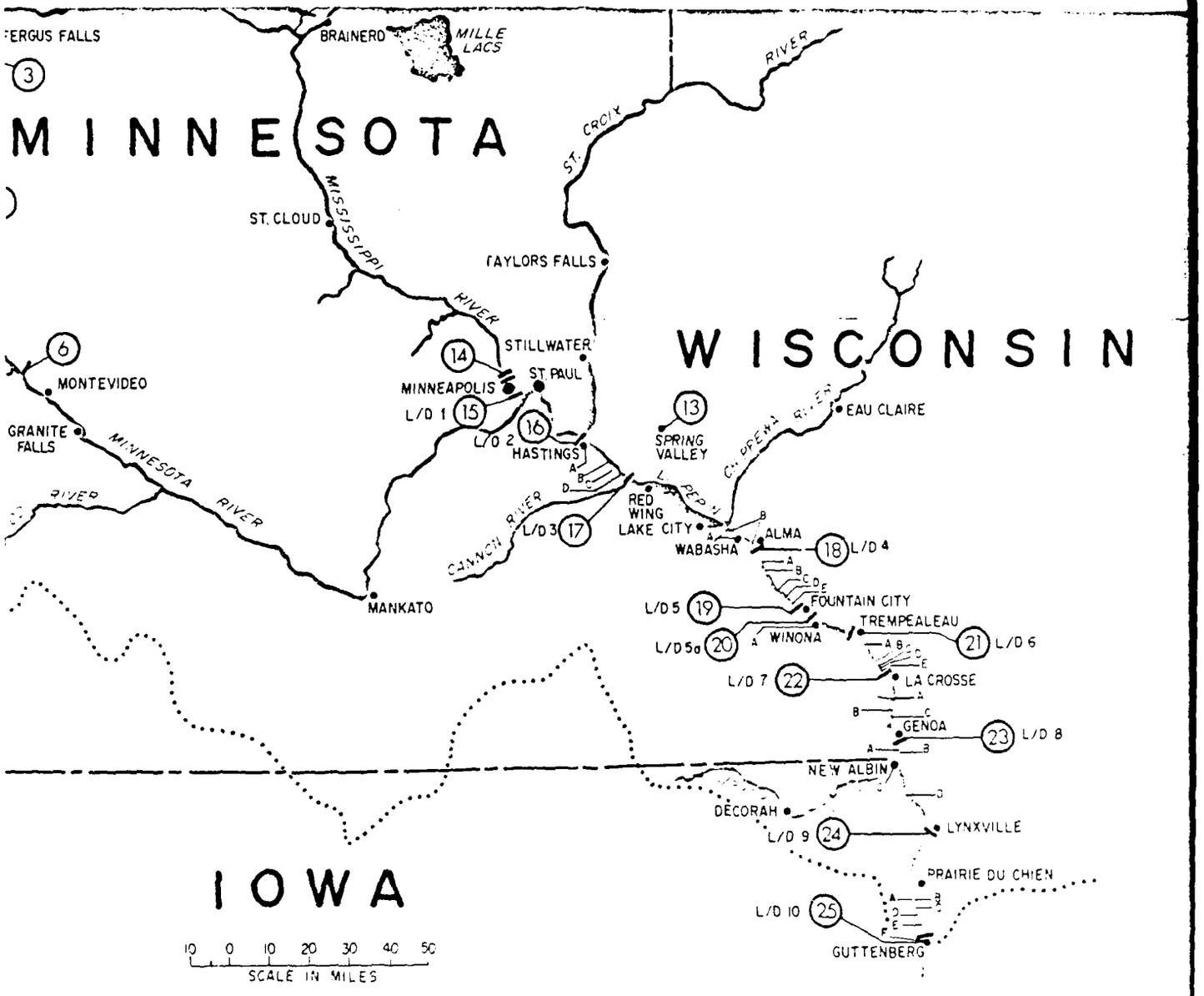
List of Figures

Note: Source for all figures Corps of Engineers unless otherwise noted.

- Figure 1 -


FERGUS FALLS
3
BRAINERD
MILLE LACS
MINNESOTA
ST. CROIX RIVER
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24
LYNXVILLE
PRAIRIE DU CHIEN
L/D 10
25
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IOWA
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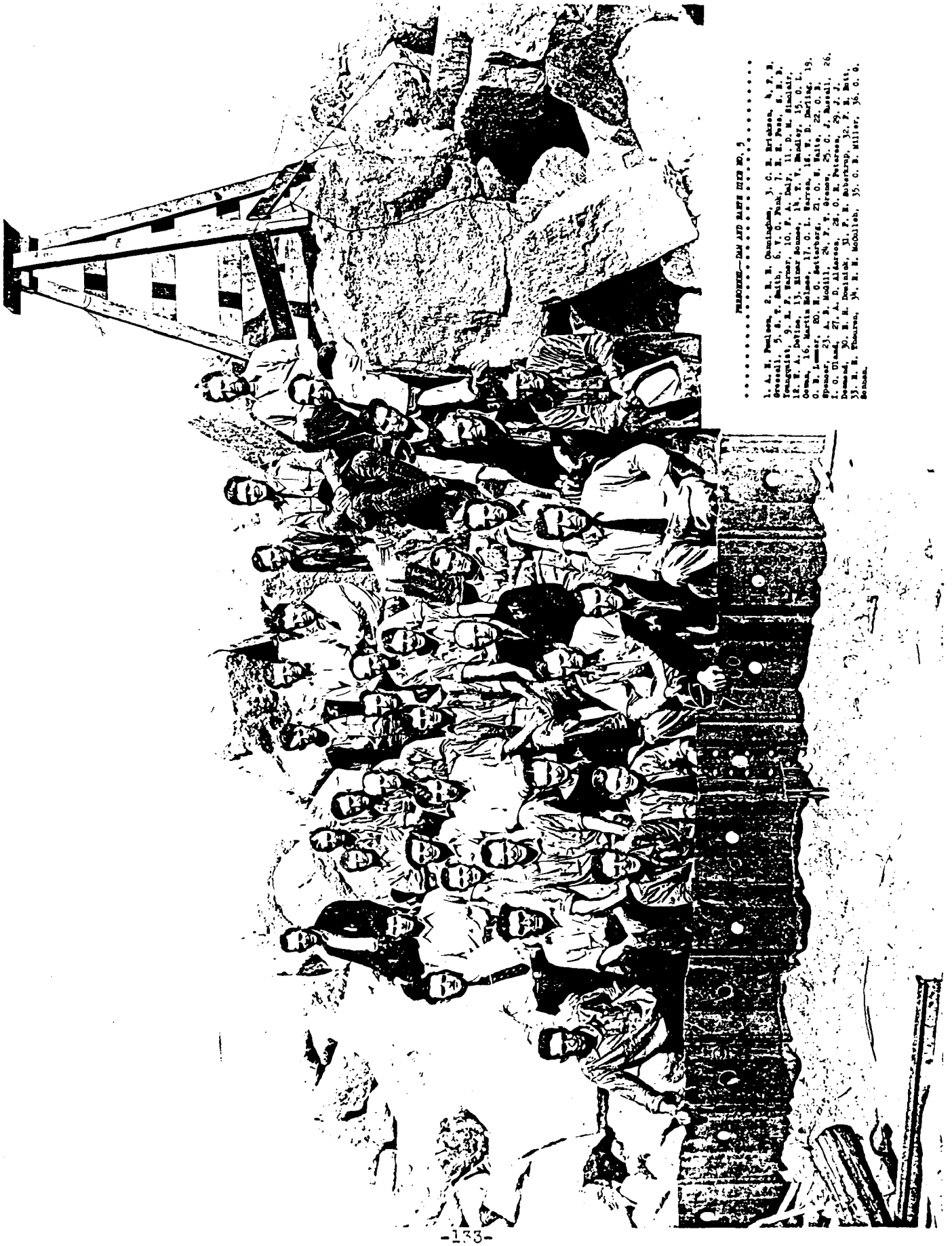
SCALE IN MILES

Figure 2



PERSONNEL—DAY AND NAVY MEN NO. 5

1. A. H. Poulsen, 2. R. H. Cunningham, 3. C. R. Erickson, 4. F. E. Brownell, 5. S. T. Smith, 6. V. C. Funk, 7. E. E. Fox, 8. E. B. Youngquist, 9. E. F. Farmer, 10. F. A. Daly, 11. D. M. Sinclair, 12. T. A. Doyle, 13. Elmer Bonnes, 14. T. T. Handley, 15. O. L. Cohen, 16. Martin Nelson, 17. O. L. Farren, 18. T. D. Darling, 19. O. E. Lammer, 20. E. C. Satterberg, 21. O. E. Hale, 22. O. E. Spencer, 23. A. B. Modill, 24. T. T. Green, 25. C. J. Randall, 26. I. O. Tiland, 27. A. D. Alderson, 28. O. E. Peterson, 29. J. J. Desmond, 30. E. E. Dunlick, 31. P. E. Albertrup, 32. P. E. Bitt, 33. E. E. Figueroa, 34. E. E. McQuilch, 35. C. E. Miller, 36. C. C. Brown.

Figure 3

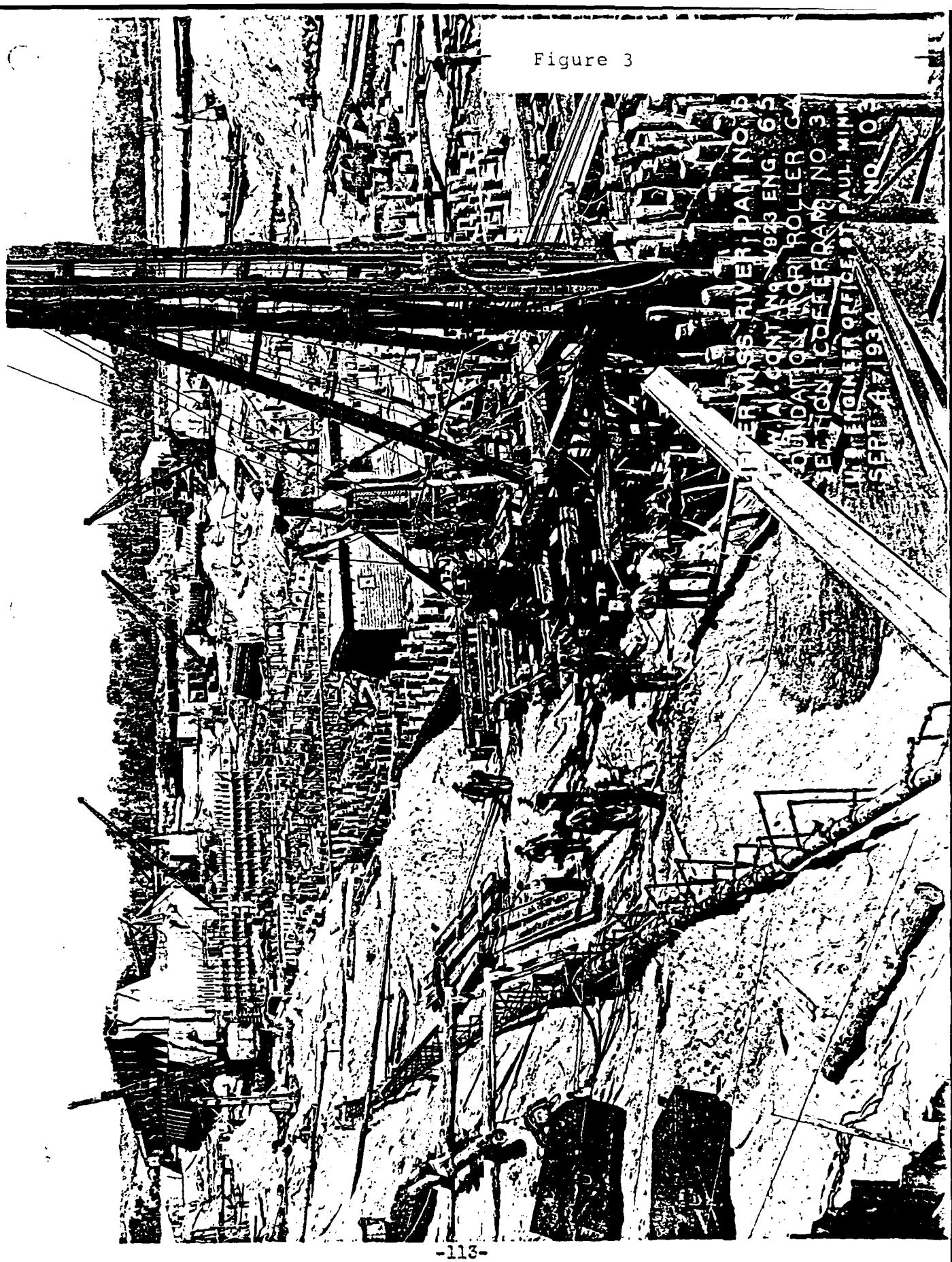
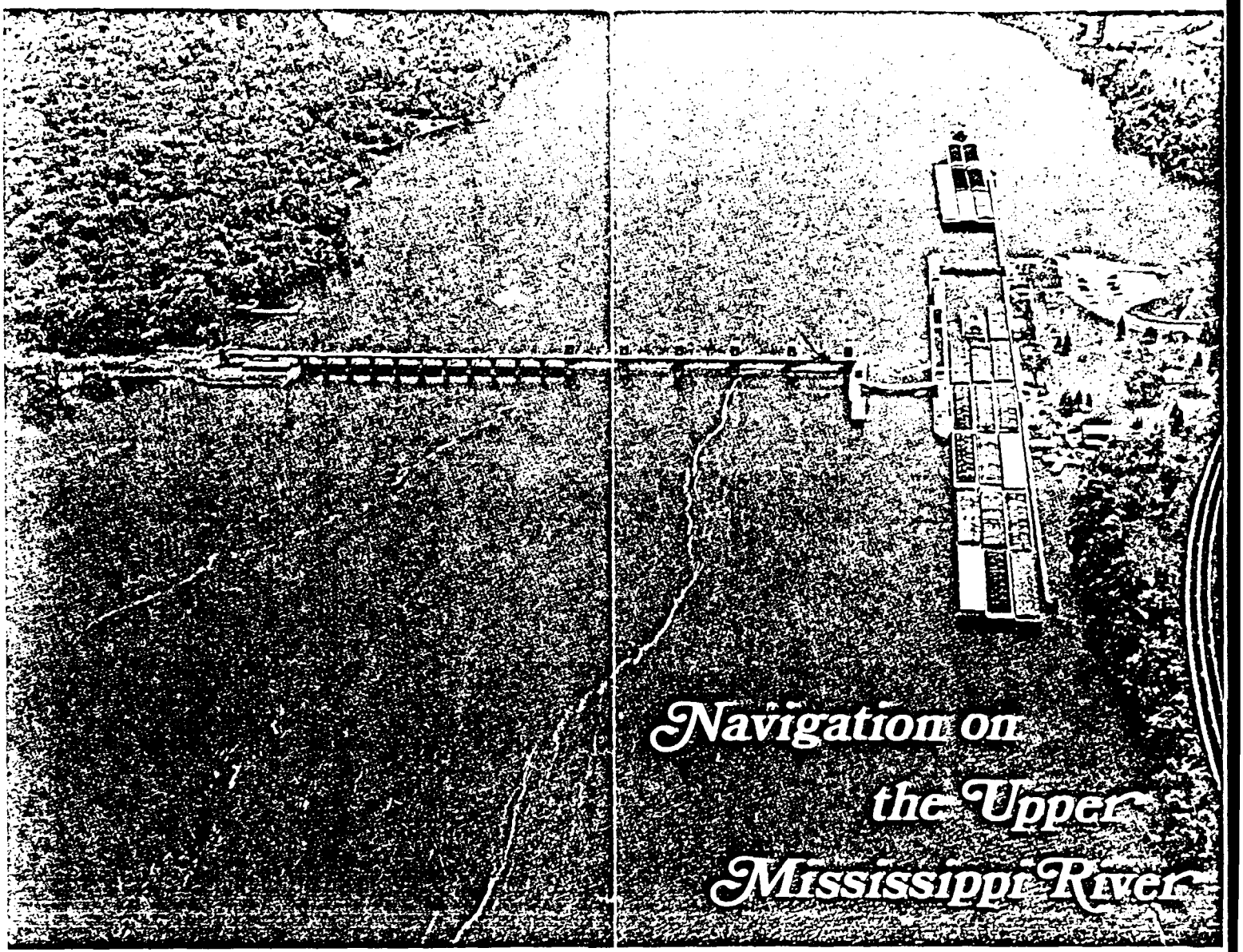

MISS. RIVER, PAN NO. 6
MAY 1923 ENG. 63
SECTION OF CAISSON ROLLER CA
SECTION OF CAISSON FRAME NO. 3
U.S. ENGINEER OFFICE, ST. PAUL, MINN.
SEPT. 4, 1934 NO. 10

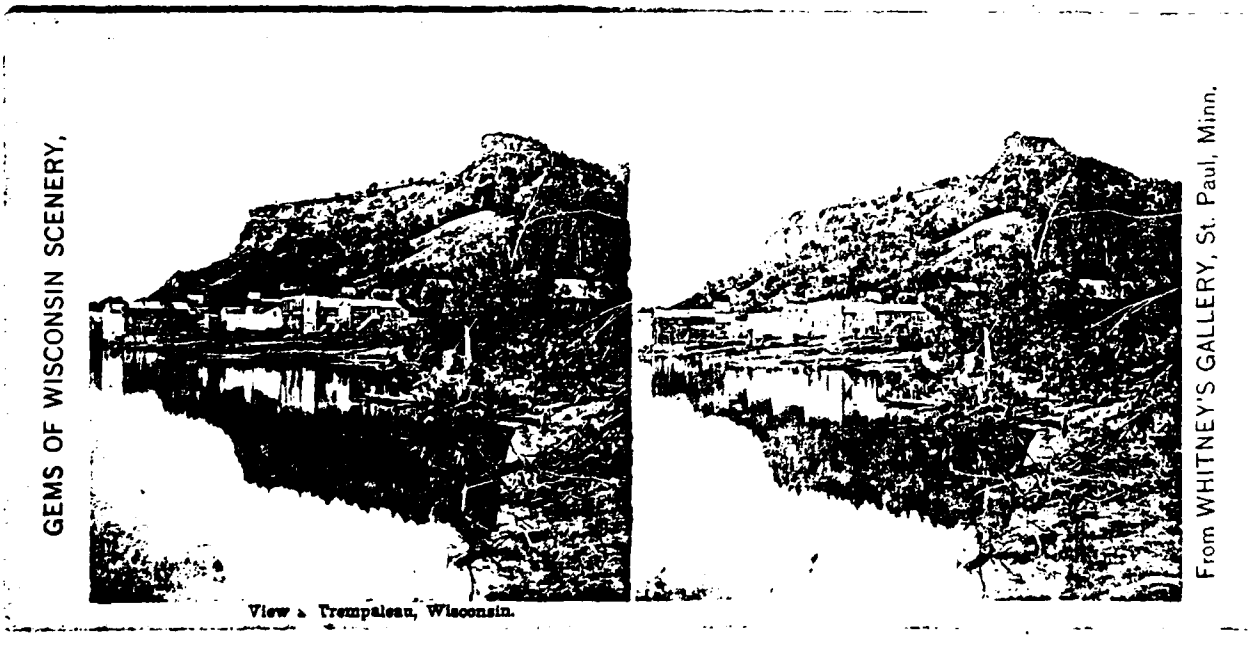
Figure 4



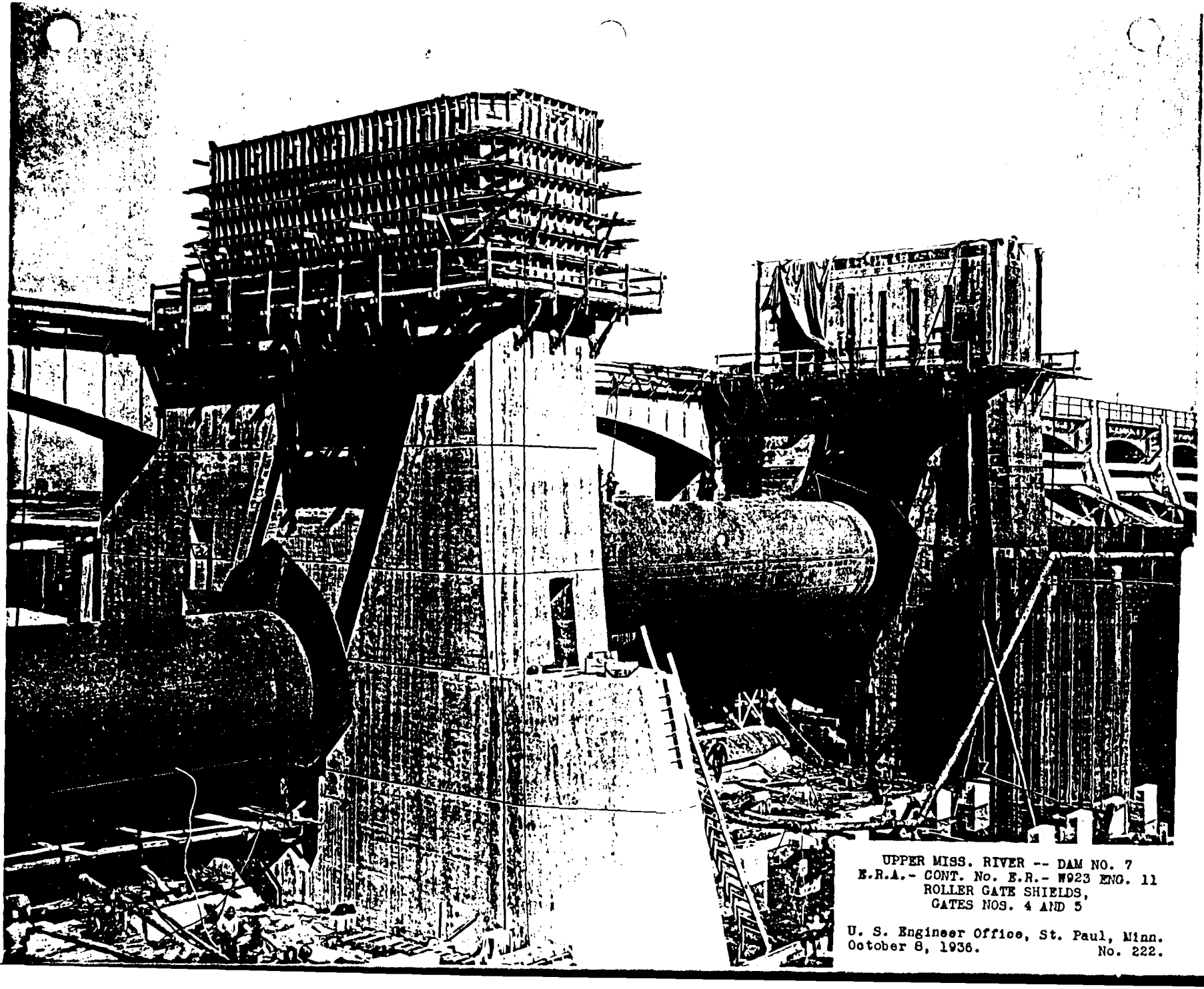
US Army Corps
of Engineers
St. Paul District

1135 U.S. Post Office & Custom House
St. Paul, Minnesota 55101-1479

— Figure 6



Note: the Alma/Trempeleau views used here are 'stand-ins' for Genoa/Lynxville shots yet to be located.



UPPER MISS. RIVER -- DAM NO. 7
E.R.A.- CONT. No. E.R.- W923 ENG. 11
ROLLER GATE SHIELDS,
GATES NOS. 4 AND 5

U. S. Engineer Office, St. Paul, Minn.
October 8, 1936. No. 222.

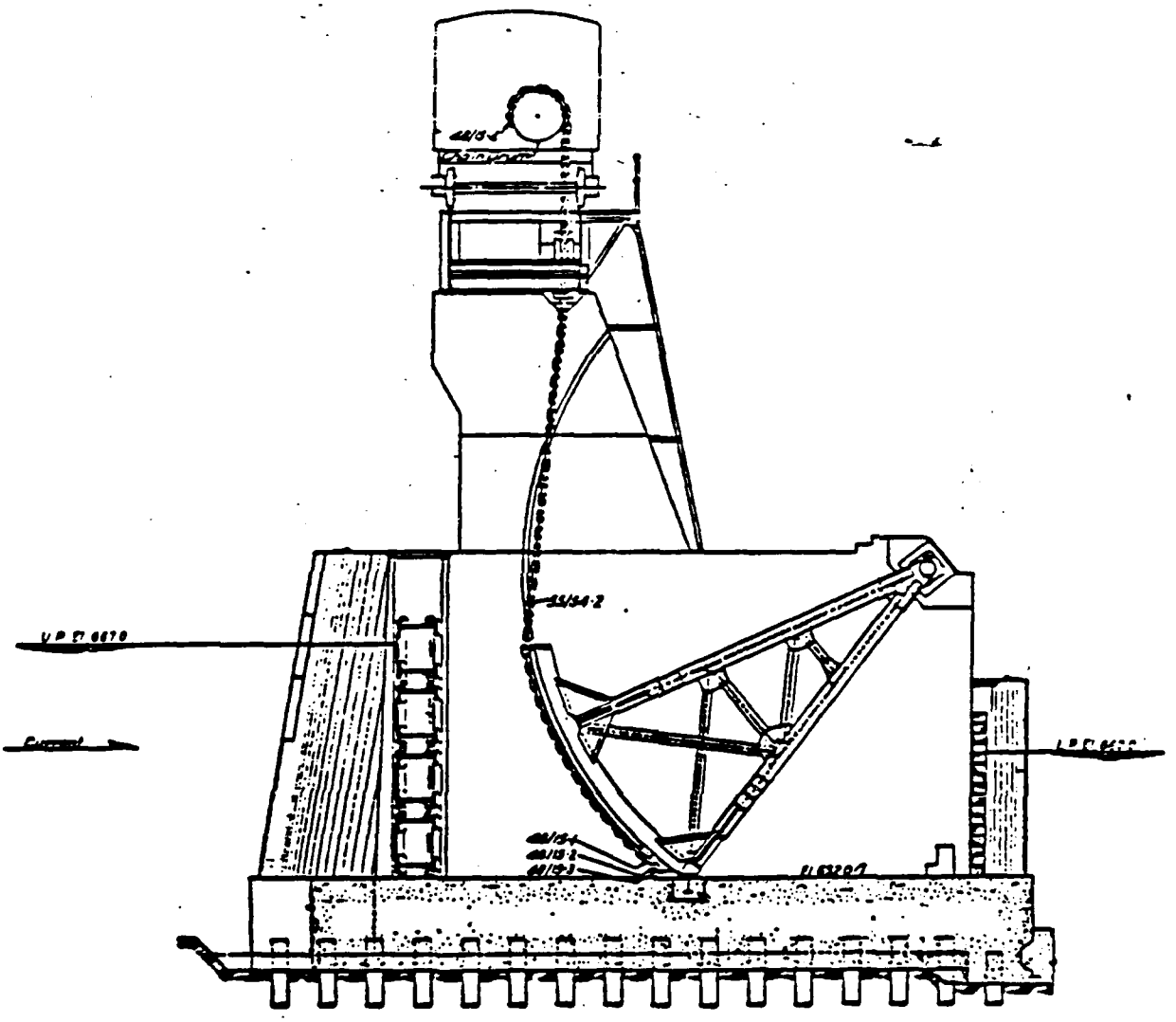
- Figure 7

US Army Corps
of Engineers
St. Paul District

MAJOR REHABILITA Figure 7

MISSISSIPPI RIVER LOCKS AND DAMS 3 - 10

IN THE ST. PAUL DISTRICT

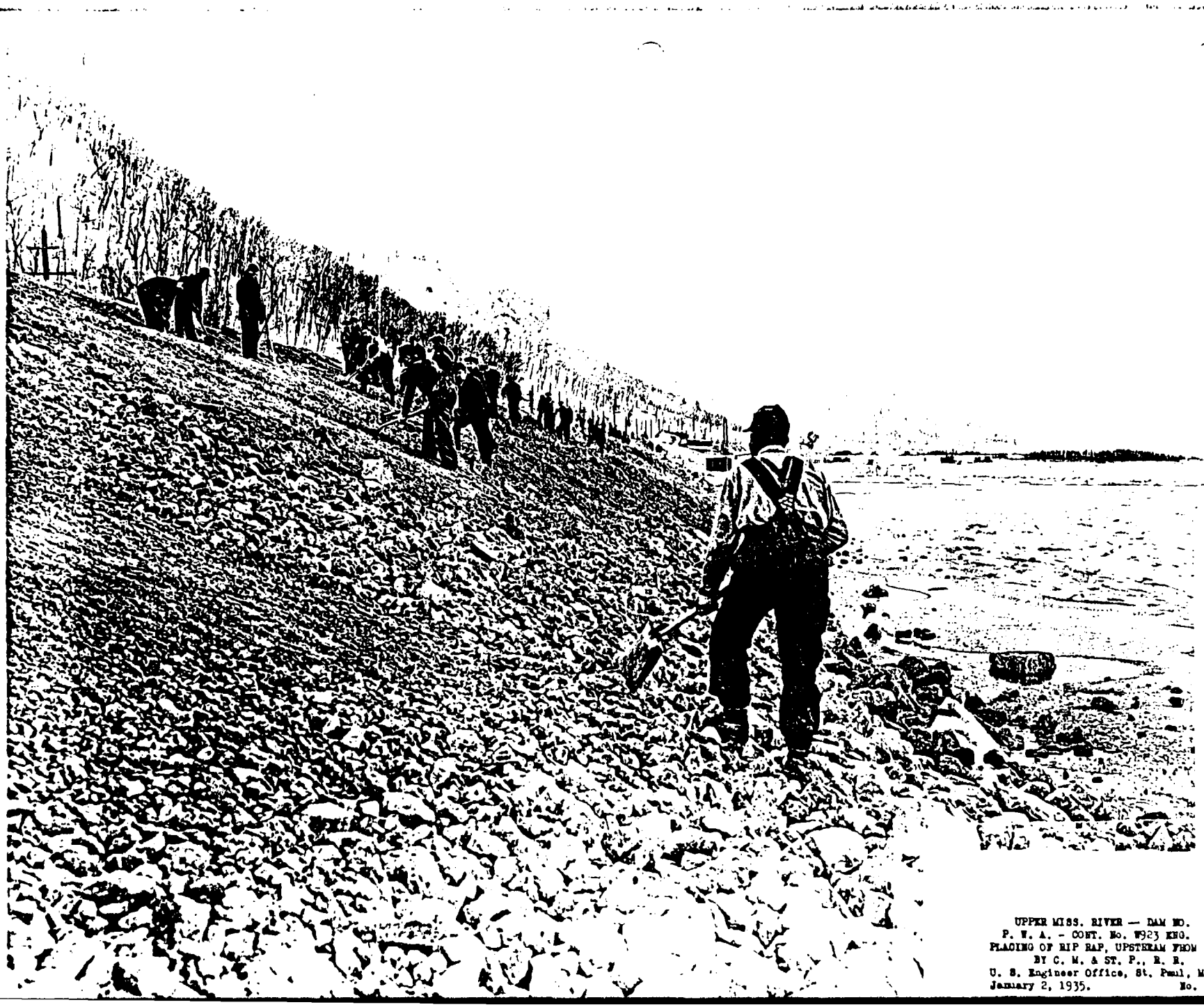


SECTION THRU DAM AT TAINTER GATE

OVERVIEW AND CULTURAL RESOURCES COMPLIANCE REPORT

WITH A PROGRAMMATIC MEMORANDUM OF AGREEMENT

JANUARY 1987



UPPER MISS. RIVER — DAM NO.
P. W. A. - CONT. No. W923 ENG.
PLACING OF RIP RAP, UPSTREAM FROM
BY C. M. & ST. P., R. R.
U. S. Engineer Office, St. Paul, Minn.
January 2, 1935. No. 149.

Figure 8